VISHWAKARMA INSTITUTE OF TECHNOLOGY, PUNE

AI&DS Insights

Monthly Awareness Bulletin

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"The best way to predict the future is to invent it."

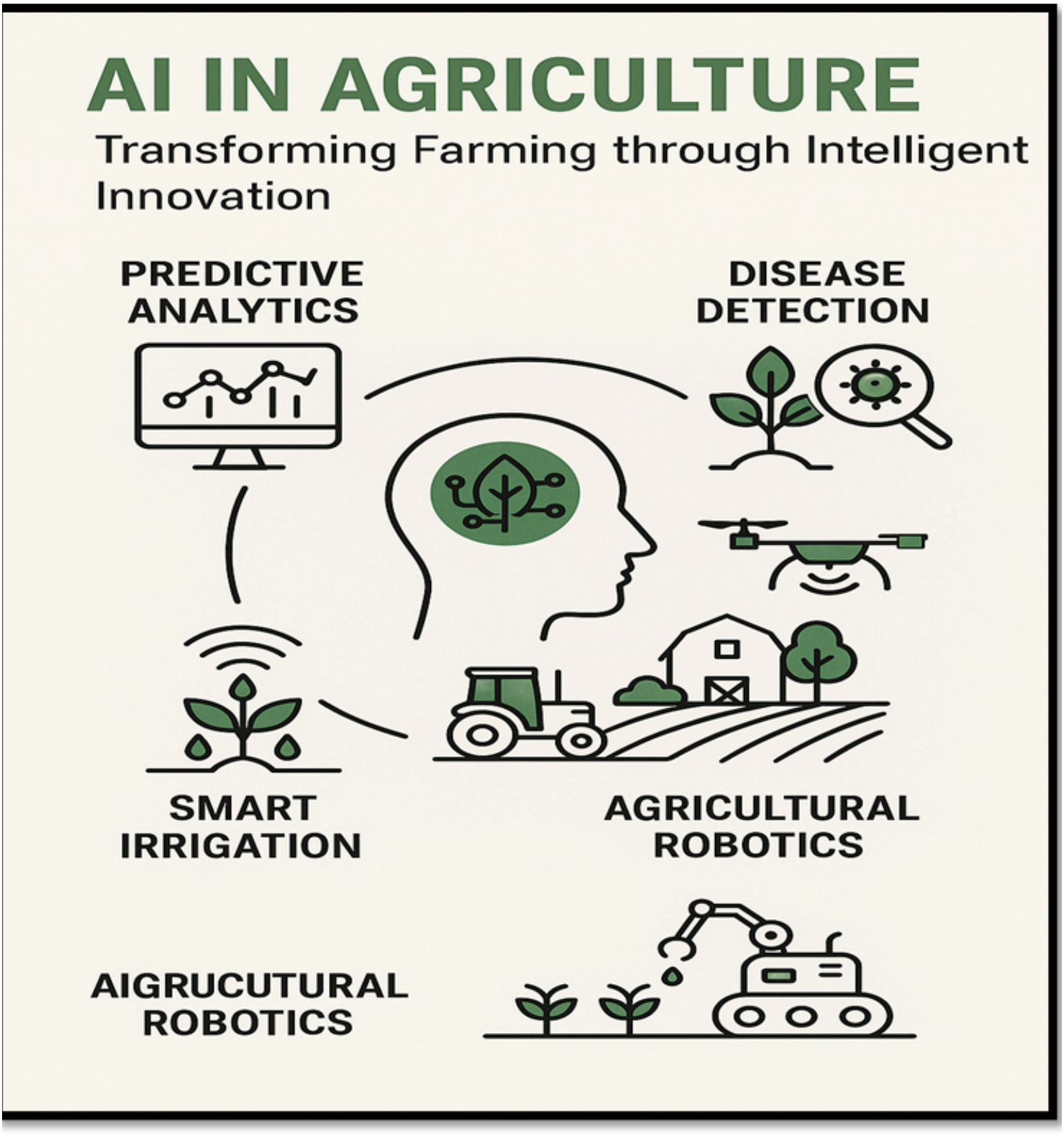
TOON

Beat plastic Pollution

The theme for World Environment Day 2025 is "Beat Plastic Pollution" or alternatively stated as "Ending Global Plastic Pollution". This theme highlights the urgent need to address the growing plastic crisis that threatens ecosystems, wildlife, and human health. The focus is on reducing plastic waste, promoting sustainable packaging, and encouraging eco-friendly innovation to protect the planet. South Korea is hosting World Environment Day 2025, emphasizing its commitment to tackling plastic waste through policy innovation and public awareness campaigns

Faculty Article

AI in Agriculture: Transforming Farming through Intelligent Innovation



Faculty Article

AI in Agriculture: Transforming Farming through Intelligent Innovation

The integration of Artificial Intelligence (AI) in agriculture marks a revolutionary step toward addressing challenges such as food security, climate change, and resource efficiency. Through advanced data analytics, machine learning (ML), computer vision, and robotics, AI empowers farmers with intelligent tools for decision-making and precision farming. These developments are redefining the agricultural ecosystem, making it more productive, sustainable, and technology-driven. AI technologies enable farmers to analyze large volumes of environmental and operational data, detect anomalies, optimize irrigation, forecast weather conditions, and automate routine activities. Precision agriculture, supported by AI, allows input application (water, fertilizers, pesticides) at the right place and time, thus reducing wastage and improving crop yields.

Emerging AI Trends in Agriculture

The modern agri-tech landscape is rapidly evolving with AI at the forefront. Key trends include:

Predictive Analytics for Crop Management

AI algorithms like LSTM (Long Short-Term Memory) and XGBoost process historical weather, soil, and crop data to predict planting cycles, disease outbreaks, and yield forecasts.

Computer Vision for Disease Detection

CNN-based models analyze images of crop leaves to detect diseases like blight, rust, and mildew in real time. Applications such as Plantix are widely used for image-based diagnosis with high accuracy.

AI-Driven Smart Irrigation

AI models integrated with IoT sensors assess soil moisture and atmospheric conditions, automating irrigation to reduce water consumption. Reinforcement learning enhances adaptive scheduling for water management.

Autonomous Agricultural Robotics

Robots equipped with AI and vision systems perform tasks such as harvesting, spraying, and weeding with minimal human intervention. “See & Spray” systems by Blue River Technology exemplify precision weed control using deep learning.

. This ensures fast and localized decision-making.

AI in Agri Supply Chain Optimization

AI tools forecast demand, optimize logistics, and reduce post-harvest losses. Natural Language Processing (NLP) models also provide market advisories and weather alerts to farmers in regional languages.

Edge AI and Real-Time Processing

AI deployed on edge devices allows real-time data processing on farms, reducing latency and reliance on cloud computing

Challenges and Future Scope

Despite its benefits, AI in agriculture faces hurdles such as lack of digitization in rural areas, high cost of deployment, and data privacy issues. To address this, future research should focus on Federated Learning, Explainable AI (XAI), and affordable edge computing systems. Developing inclusive AI models that generalize across crops and regions remains a key goal.

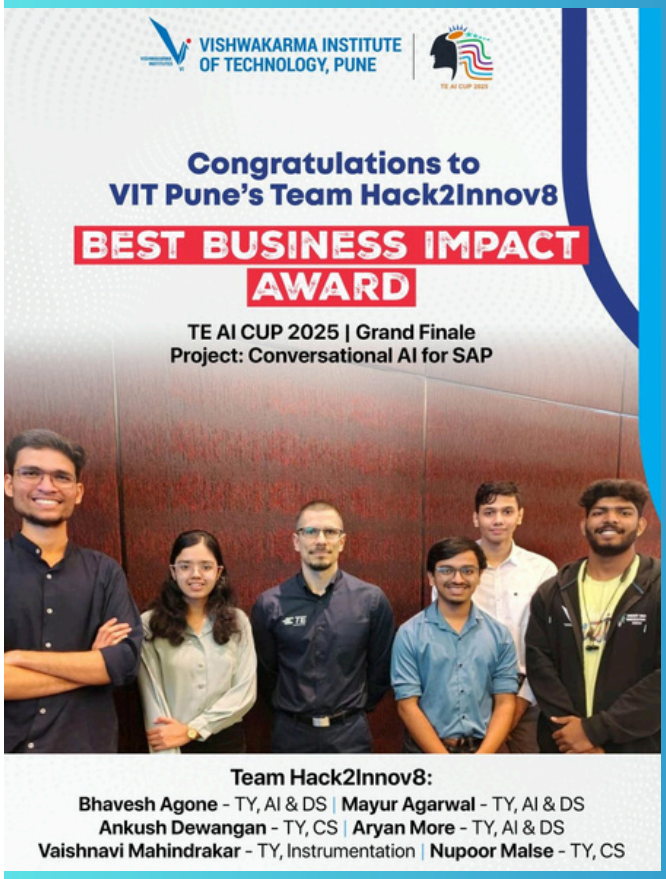
Conclusion

AI is redefining agricultural practices by enhancing productivity, sustainability, and resilience. As the world grapples with food and environmental challenges, AI offers data-driven insights and automation to ensure smarter farming. Collaborations among technologists, agronomists, and policymakers are crucial to maximize the impact of AI in agriculture.

“Integrating AI into agriculture is not merely technological advancement—it is an imperative step toward sustainable food systems.”

Dr. Hrushikesh Joshi
Assistant Professor, AI&DS Department

Activities



Team Hack2Innov8, representing VIT Pune, has won the "Best Business Impact" award at the prestigious TE AI CUP 2025, organized by TE Connectivity.

Congratulations to the team: Bhavesh Agone – TY, AI & DS, Mayur Agarwal – TY, AI & DS, Ankush Dewangan – TY, CS, Aryan More – TY, AI & DS, Vaishnavi Mahindrakar – TY, Instrumentation, Noopur Malse – TY, CS.

Third-year AI & DS students from VIT Pune has secured an overall 3rd position globally at the prestigious TE AI CUP 2025, emerging as the highest-ranked Indian team in the competition!
Competition Duration: 6 months
Challenge: Solve real-world industrial problems using AI
Winning Project: Part Number Recognition – built for advanced manufacturing applications

With teams from across the globe participating, AI ACES proudly brought India into the top 3, showcasing innovation, technical excellence, and teamwork at an international level.

Meet the Champions:
sanket kulkarni (Team Leader)
Mayank Kulkarni
Shivani Kshirsagar
Manasi Pandit
Sahil Deogade
Hitesh Tolani
—all TY, B.Tech – AI & DS

Faculty Publications

Name	Summary
MAHALLE, Parikshit N. KACHHORIA, Renu D AHIRE, Yash Y. CHANDWADE, Saurabh P. KHODKE, Shantanu S. JADHAV, Prranjali S.	Patent Title : AN INPUT-INDEPENDENT IOT-BASED INTELLIGENT AUTO-VISUALIZER SYSTEM

Team - AI&DS INSIGHTS

Dr Minal Barhate

Prof. Lokesh Khedekar